

## ABSTRACT OF THE DISCLOSURE

A microfluidic device has a plurality of H-shaped micro channels not connected to each other and formed on a substrate. Each of the H-shaped micro channels comprises two main channels separately placed on two opposite sides in parallel and a plurality of sub-channels perpendicularly connected to the two main channels. The present invention is designed in such a way that various reagents dropped into different H-shaped micro channels are immobilized on respective sub-channels because of the different widths of the main channel and sub-channel. Afterwards the reagents are coated with a layer of polymer. The polymer has a porous structure that allows the passage of any sample to be tested. Finally, a plurality of upper channels parallel to one another are directly fabricated in the polymer, or in another layer of polymer stacked on the previous polymer.